

FIGURE 1

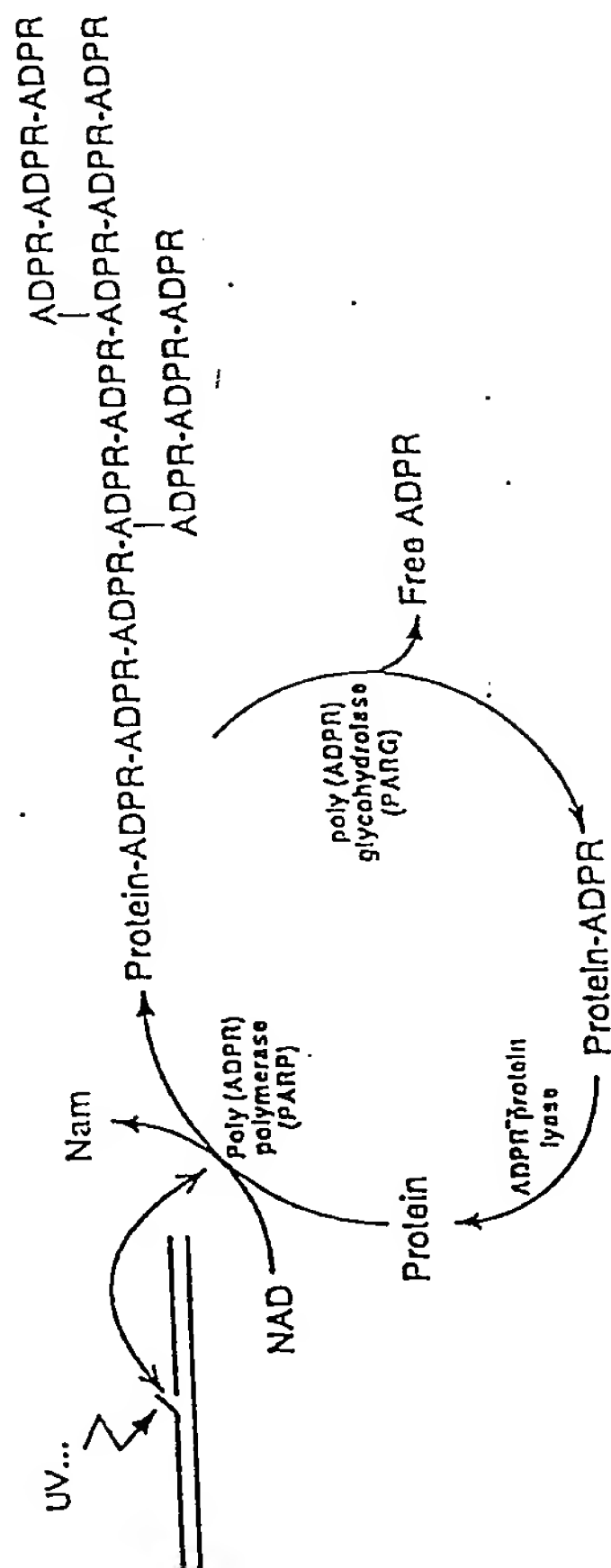


FIGURE 2

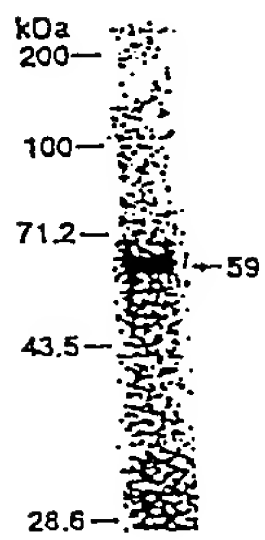


FIGURE 3

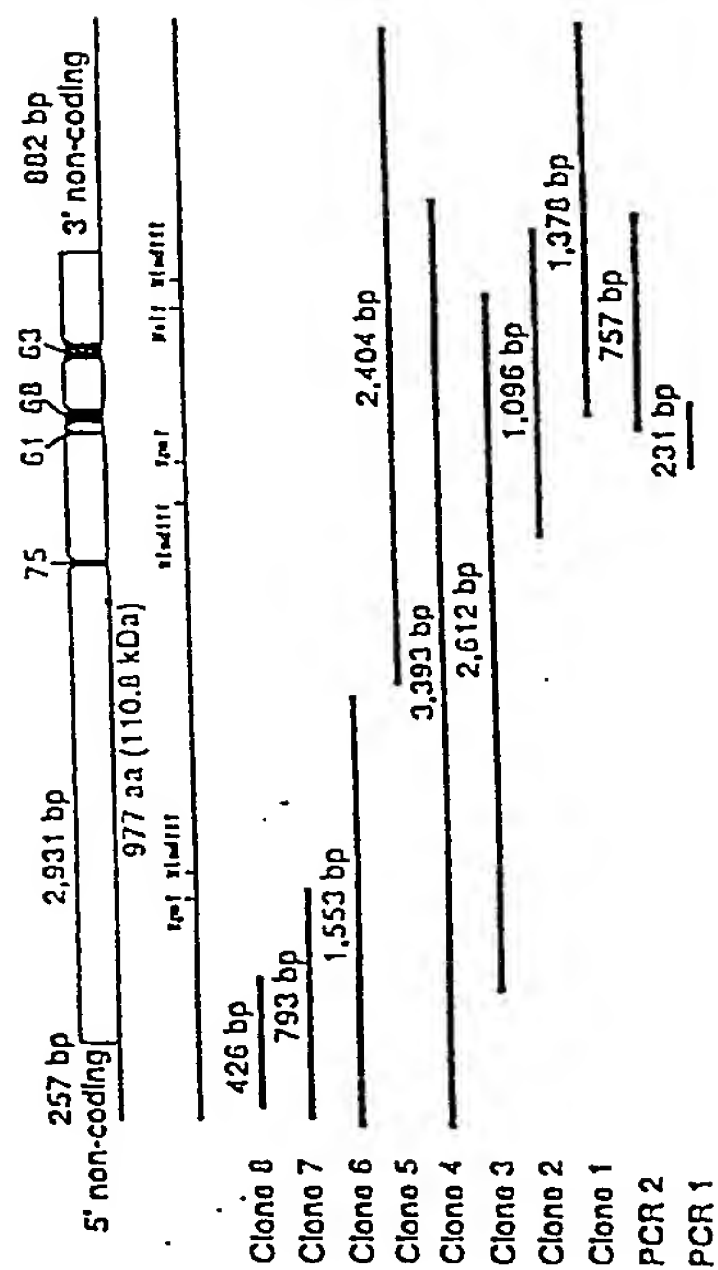


FIGURE 4

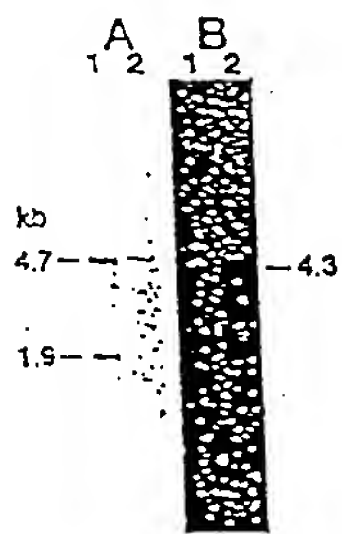


FIGURE 5

bPARG	(422)	ED	KRKEQCEMKHQ RTE . .	RKIPKYIPPH	SEQ ID NO: 19
hPARG	(421)	ED	RRKEQWETKHQ RTE . .	RKIPKYVPPH	SEQ ID NO: 20
mPARG	(413)	ED	RRKEQCEVRHQ RTE . .	RKIPKYIPPN	SEQ ID NO: 21
CePARG	(29)	HQVPTMKRRKLTEHGNTTESLLKEDPEEPKS			SEQ ID NO: 22
hPARG	(205)	EG	KRKGD . EVDG .	VDEVAKKSKKEKDK	SEQ ID NO: 23
mPARG	(205)	EG	KRKGD . EVDG .	TDEVAKKSKRKETDK	SEQ ID NO: 24
bPARG	(208)	EG	KRKGD . EVDG .	IDEVTKKSKKEKDK	SEQ ID NO: 25
aPARG	(205)	EG	KRKGE . EVDG .	NVVAKKSKRKEKEK	SEQ ID NO: 26
XIPARG	(204)	EG	KRKAD . EVDG .	HSAATKKKIKKEKEK	SEQ ID NO: 27
DmPARG	(202)	EELPDTKRAKM .	ELSDTNEEGEKKQR		SEQ ID NO: 28
SpPARG	(205)	EGVSSAKKAKI .	EKIDEEAASI KELTSKIKK		SEQ ID NO: 29

FIGURE 6

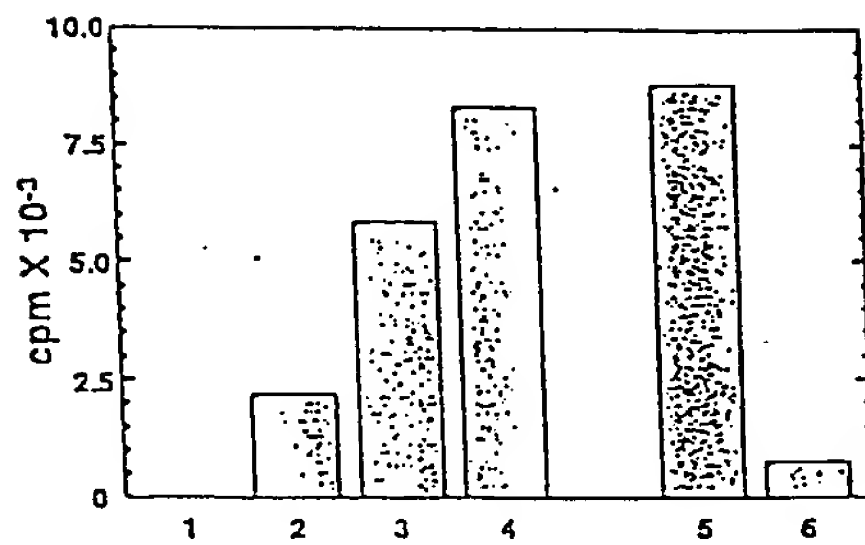


FIGURE 7

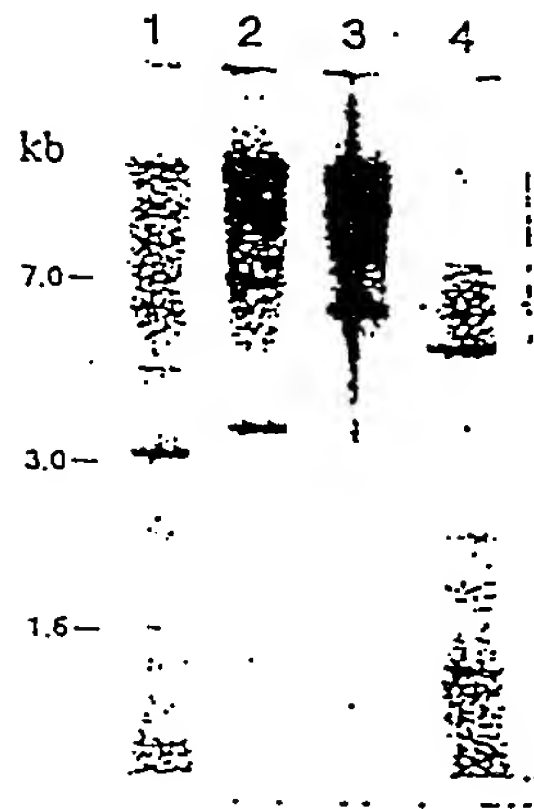


FIGURE 8

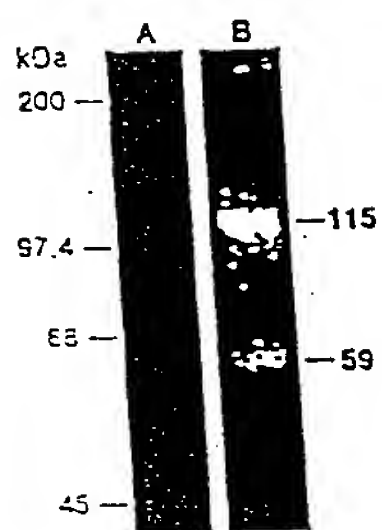


FIGURE 9

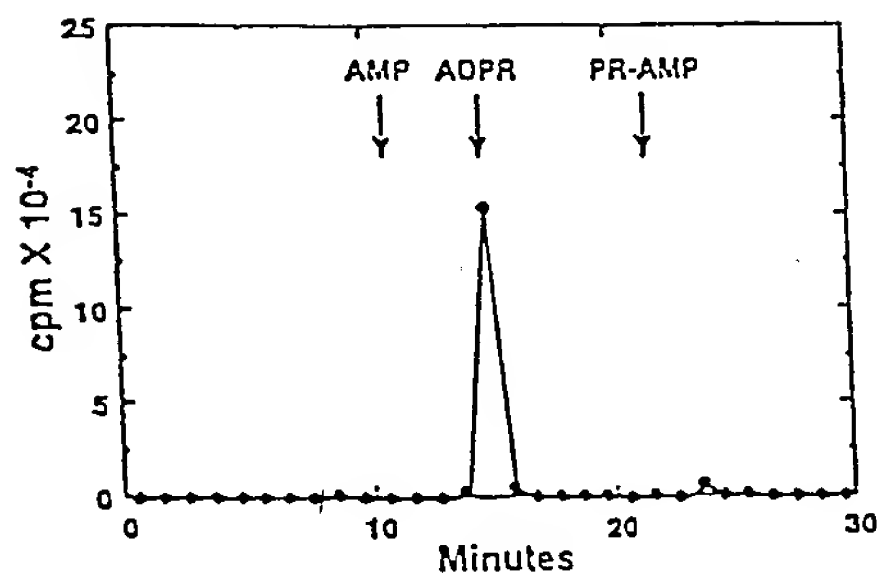
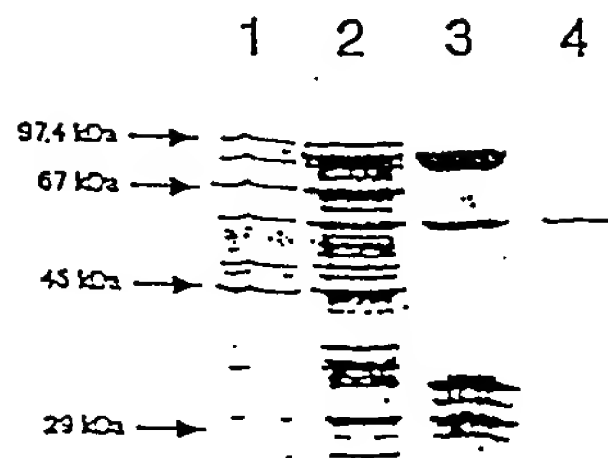


FIGURE 10



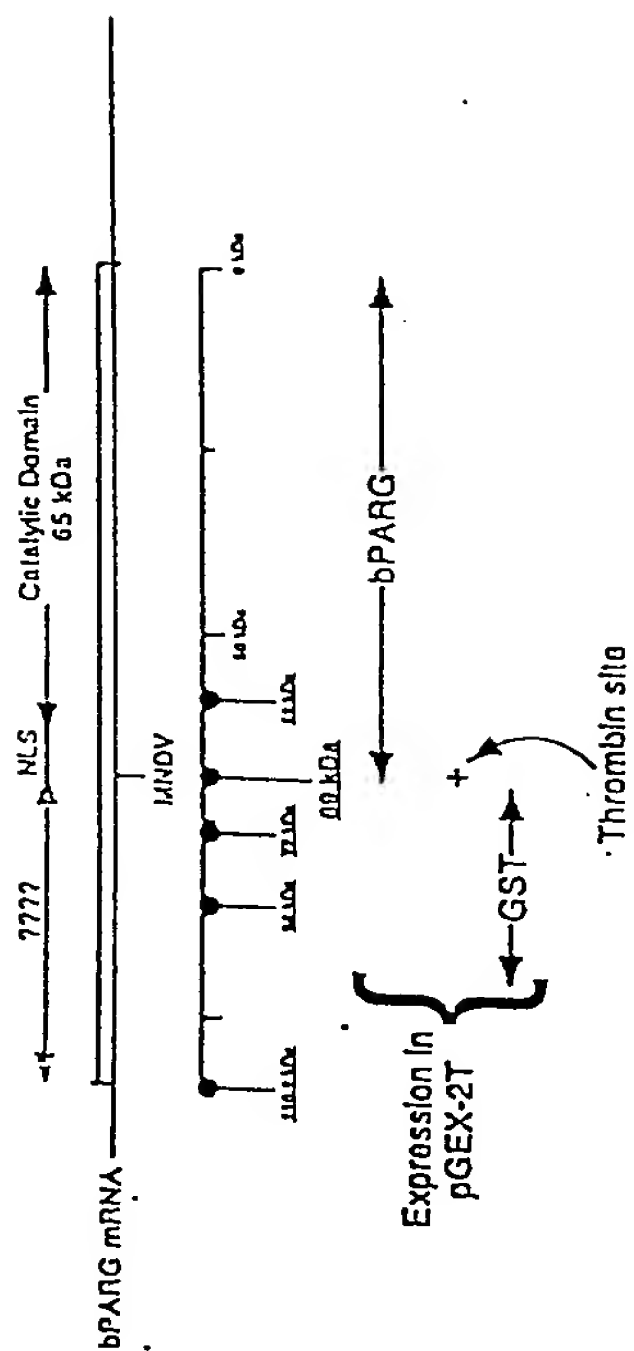


FIGURE 12

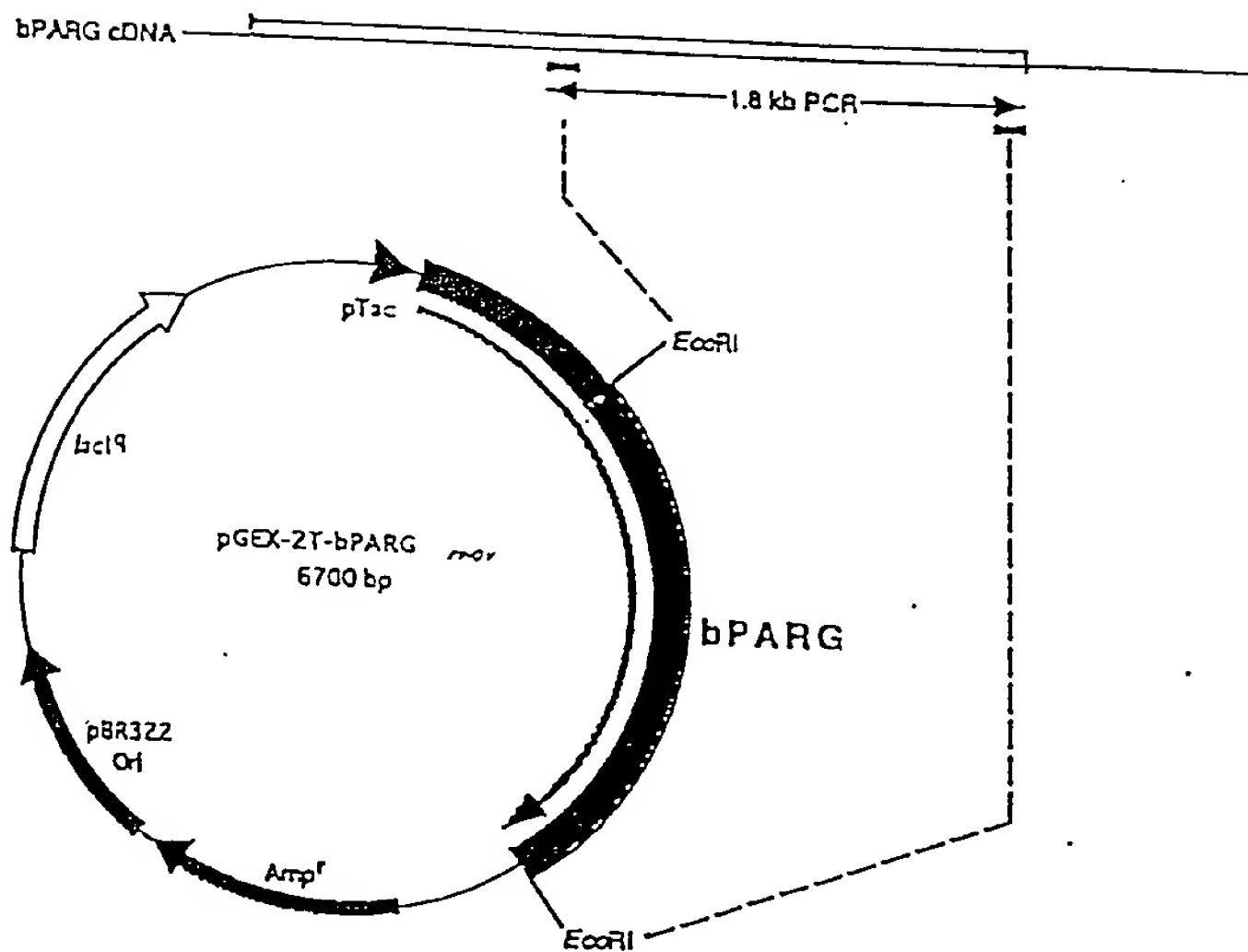


FIGURE 13

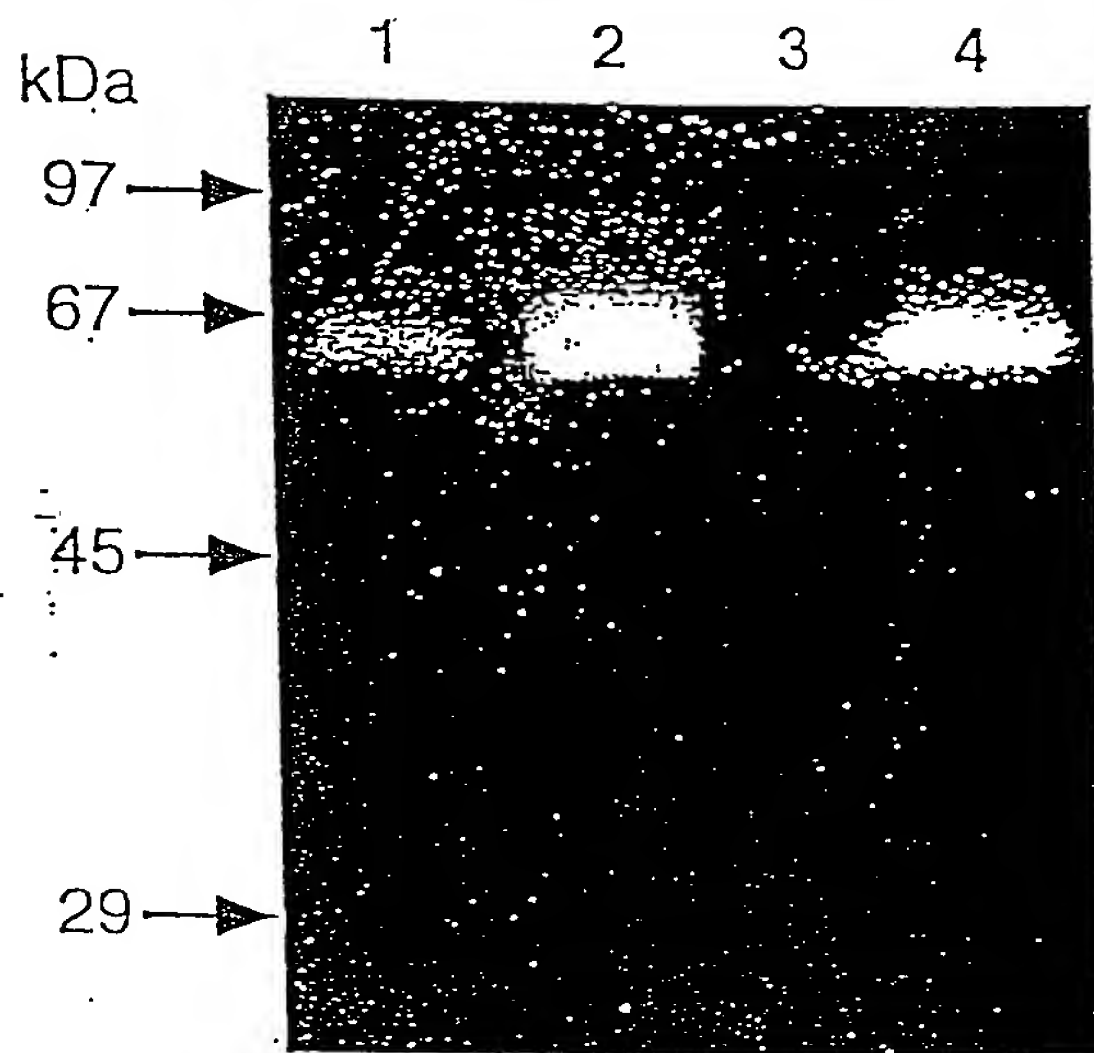
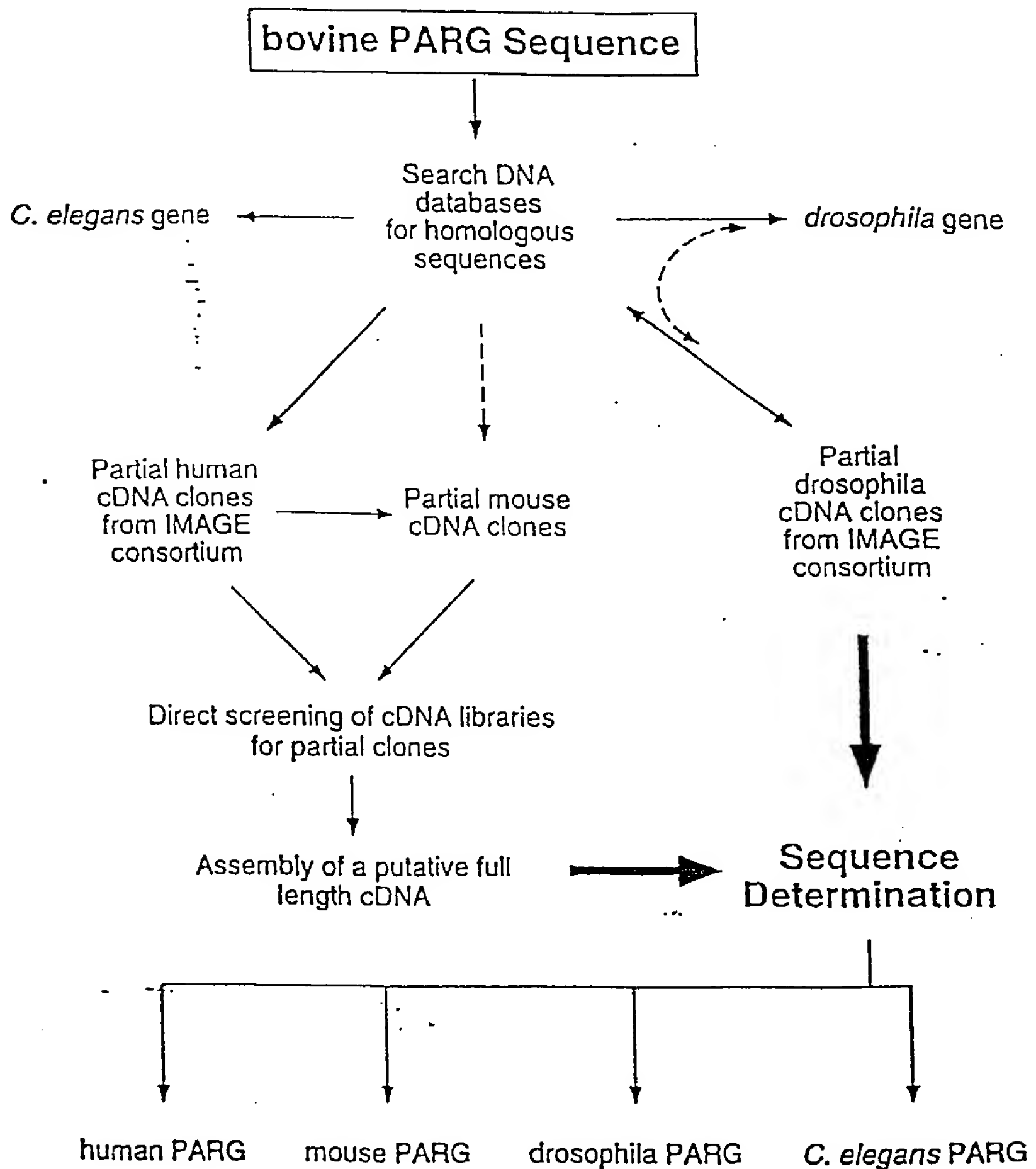


FIGURE 14

Strategy to Obtain Homologous PARG Sequences



Domain Organization of PARs

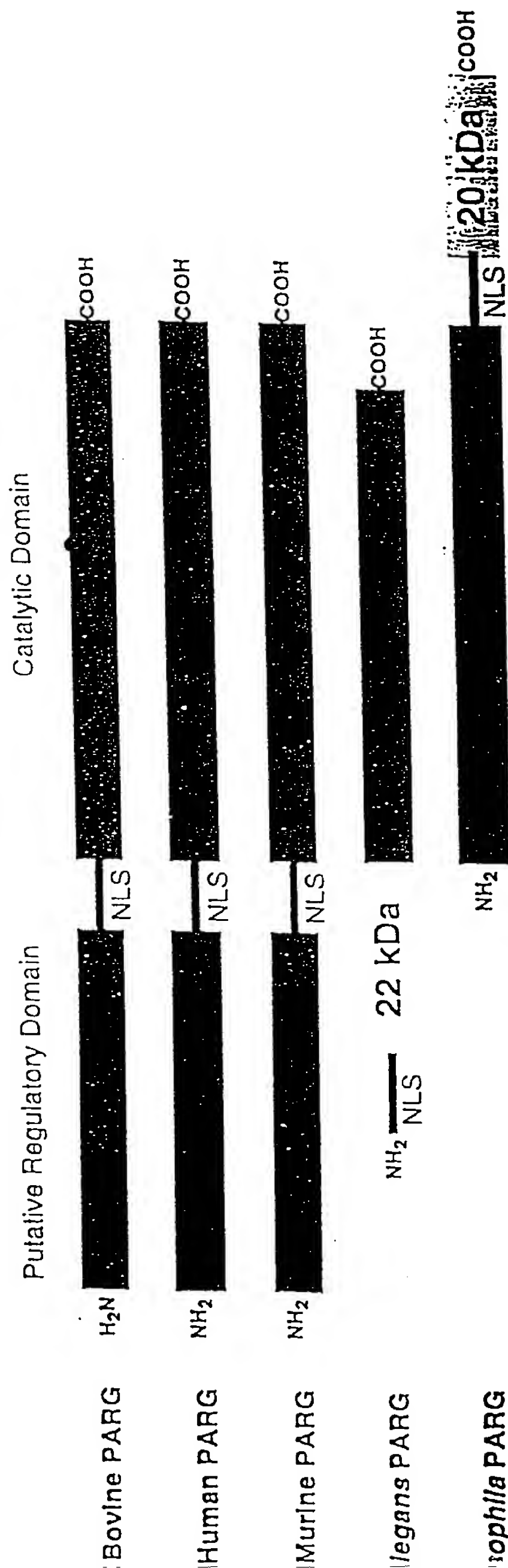


FIGURE 16

Multiple Alignment of Amino Acid Sequences of PARG from Different Species

Bparg 1 MSAGPGCEPCTKRPRWDAAATSPFAASDARSFFGRQRRVLDSDKAPVQFRVPPSSSGCALGRAGQHRGSATSLVFKQKTIITSMMDTKGIXTVESKSLHSEK
Hparg 1 MNAGPGCEPCTKATRWGAATTS.PAASDARSFFPSRQRRVLDPKDAHVQFRVPPSSPACVPGQAGQHRGSATSLVFKQKTIITSMMDTKGIXTAESKSLHSEK
Hparg 1 MSAGPGCEPCTKA.RWGAAAGTSAPTASDSRSFFGRQRRVLDPKDAHVQFRVPPSSPACVSGRAGPHRGHATSFFVFKQKTIITSMMDTKGIXTAESK...SK
Dparg 1 -----
Ceparg 1 -----

Bparg 101 EWNHTREESMSSSVQKDNFIQHNMKEKLEWVSQLGFDKSPVHKGTQILKQHQTAAAMCKWQNEGPHSERLLESEPPAVTLVPEQPSNANVDQSSPKDDHSDT
Hparg 100 EWNHTREESMSSSVQKDNFIQHNMKEKLEWVSQLSLDKSLTEKSTQILNQHQTAAAMCKWQNEGPHSERLLESEPPAVTLVPEQPSNANVDQSSPKDDHSDT
Hparg 97 EWNHTREESMSSSVQKDNFIQHNMKEKLEWVSQLSLDKSLTEKSTQILNQHQTAAAMCKWQNEGPHSERLLESEPPAVTLVPEQPSNANVDQSSPKDDHSDT
Dparg 1 -----
Ceparg 1 -----MSKKFIELGDPVTQDEKDIEDY

Bparg 201 MSEESRDHQQLTTHVKL...ANAKQTMEDEQGRKARSQKCGKACHPAEACAGCQOQETDVVSESPLSDTGSEEDVGTGLKXNANRLNRQESSLGKSPFPFEK
Hparg 200 DSEHRDMDQQLTTHVKL...ANAKQTTEDEHAREAKSKKCHPCGDCASCQOQETDVVSESPLSDTGSEEDVGTGLKXNANRLNRQESSLGKSPFPFEK
Hparg 197 DSEHRDMDQQLTTHVKL...ANAKQTTEDEHAREAKSKKCHPCGDCASCQOQETDVVSESPLSDTGSEEDVGTGLKXNANRLNRQESSLGKSPFPFEK
Dparg 1 -----
Ceparg 23 VGVGFARHQPVTMKRRKLTETGHTTESKEDPBPSPSRDVPVSSQSSDESQEDSAEMPHIAKEVSENCENLTETLKISHNIESLDNVTERSEHTLDN...HK

Bparg 298 ESEPESPMDVDNMSKNSCQDSEADEETSPGPDZ.QEDSSSAQTANKPSRFQPREADTELKRSSAKGCEIRLHPQFEGGESRAGMN.DVNAKRPGSTSSLM
Hparg 297 ESEPESPMDVDNMSKNSCQDSEADEETSPGPDZ.QEDSSSAQTANKPSRFQPREADTELKRSSAKGCEIRLHPQFEGGESRAGMN.DVNAKRPGSTSSLM
Hparg 291 ESEPESPMDVDNMSKNSCQDSEADEETSPVYDE.QEDRSS.QTANKLSSCQAREADGDLKRKYLTKGSEVRLHPQF.GENHAGTS.DLNAKPSGNSSSLM
Dparg 1 -----
Ceparg 119 STEPHEE.DVNMKSHIDVAINSDDEDELVLLENMEXEMRDGEQVQQLS..QDLFADDQELIEIPGIMKDTTTQLDITDSEVETAQKMEMIETKADSTFVG

Bparg 396 VECRNSKQHGKXDSKITDEFMRVPKAEKDRKEQCEMKEHQRTERKIPKIYPPHLSPDKKWLGTPIEM..RRMPRCGIRLPPLRPSAMHTVTIRVDLLRIG
Hparg 395 VECRNSKQHGKXDSKITDELMRLPKAEDRRKEQWETKEHQRTERKIPKIYPPHLSPDKKWLGTPIEM..RRMPRCGIRLPPLRPSAMHTVTIRVDLLRAG
Hparg 387 VECRNSKQHGKXDSKITDEFMRISKSEDRRKEQCEVREHQRTERKIPKIYPPHLSPDKKWLGTPIEM..RRMPRCGIRLPPLRPSAMHTVTIRVDLLRAG
Dparg 32THRLQK...ALCLNCARMSKSPDGGISIE.....TEEE.PEWLANSL..DDSNRGVSMHAIRNRQPFLENLPVVTAGNLERVMYQLPIRET.
Ceparg 216 EDSKATKTVRTSSSSP...LSTVETCRAPAKGRARMIQKELEKEHVIAFTEGNLT.....LQPDLNKVDPRNRYI.CTIPNFPASQG...KLRED.NRYG

Bparg 494 EVPK.PPPTHEFKDLWMDNKEVKNPCSEQNLIPVEDENGE.RAAGSRWELIQTALLNRLTRPQNLKDAILKYNVAYSKKWDPTALIDPMDKVLSEAEAEQELY
Hparg 493 EVPK.PPPTHEFKDLWMDNKEVKNPCSEQNLIPVEDENGE.RAAGSRWELIQTALLNRLTRPQNLKDAILKYNVAYSKKWDPTALIDPMDKVLSEAEAEQELY
Hparg 485 EVPK.PPPTHEFKDLWMDNKEVKNPCSEQNLIPVEDENGE.RAAGSRWELIQTALLNRLTRPQNLKDAILKYNVAYSKKWDPTALIDPMDKVLSEAEAEQELY
Dparg 115 .PPR.PYKSPCK..WDSEZVRLPCAPESKYPRENPDGS.TTIDFRNEMIERALLQPIKTCEELQAAIISINTTIRDQWFRALHQLLDEELDESSETRVFF
Ceparg 303 ..PKIVLPQRWRE.FDSRGAR...RDSIFIFKRLKLDGILKCIKTTCGYFMFVGLLE.....NMWE..FDPDITK...LPAL.BNHYKEMSELVGREEV

Bparg 592 QSILPDHVKIALCLPNICTQPIPLKQKMMHSITHSQEQIASLLANAFCTFPRRNA.KMKSEISSYPDINFNRLPFCGRSSRKPEKLTLYCFYFRV..T
Hparg 591 QSILPDHVKIALCLPNICTQPIPLKQKMMHSITHSQEQIASLLANAFCTFPRRNA.KMKSEISSYPDINFNRLPFCGRSSRKPEKLTLYCFYFRV..T
Hparg 583 QSILPDHVKIALCLPNICTQPIPLKQKMMHSITHSQEQIASLLANAFCTFPRRNA.KMKSEISSYPDINFNRLPFCGRSSRKPEKLTLYCFYFRV..T
Dparg 210 EDLLPRIIRLALRLPDLIQSPVPLKHEHKNASL6LSQQQISCLLANAFCTFPRNTLKRKSEISTFDPINFNRLYQSTGPAVLEKLCIMHIFRVCPT
Ceparg 384 LEKFARVARIAKTAEDILPERIIRLVGDVE.SATLSBKQCAALVARMFFA.....RPDSPPS.....PCRILSSDKSICVERKXFLPTTF.....

Bparg 689 EKK....PTGLVTFTRQS.L.ED.F.PEWERCEKLL..TRLEVTIEGTIEGNGQGMQLQVDFANRFVGGGVTSAGLVQEIRFLINPELIVSRFLPTEVLDE
Hparg 688 EKK....PTGLVTFTRQS.L.ED.F.PEWERCEKPL..TRLEVTIEGTIEGNGQGMQLQVDFANRFVGGGVTSAGLVQEIRFLINPELIVSRFLPTEVLDE
Hparg 680 EKK....PTGLVTFTRQS.L.ED.F.PEWERCEKPL..TRLEVTIEGTIEGNGQGMQLQVDFANRFVGGGVTSAGLVQEIRFLINPELIVSRFLPTEVLDE
Dparg 310 ERDASHVPTGVVTFVRRSCLPER.L.IDNSQSAAPLGDVPLVDAGCTIEDEGIGLLQVDFANKYLGGCVLGHGCVQEIRFVICPELLVGLKLYTECLRP
Ceparg 463 DKMSMDPPDGAVSF.RLTMMKDKTFNEEM.KDKKLRLSLPEVEFFDEMLIEDTAL.CTQVDFANZHLGGCVLNEGSVQEIRFLMCPENMVGMLLCEKMKQ

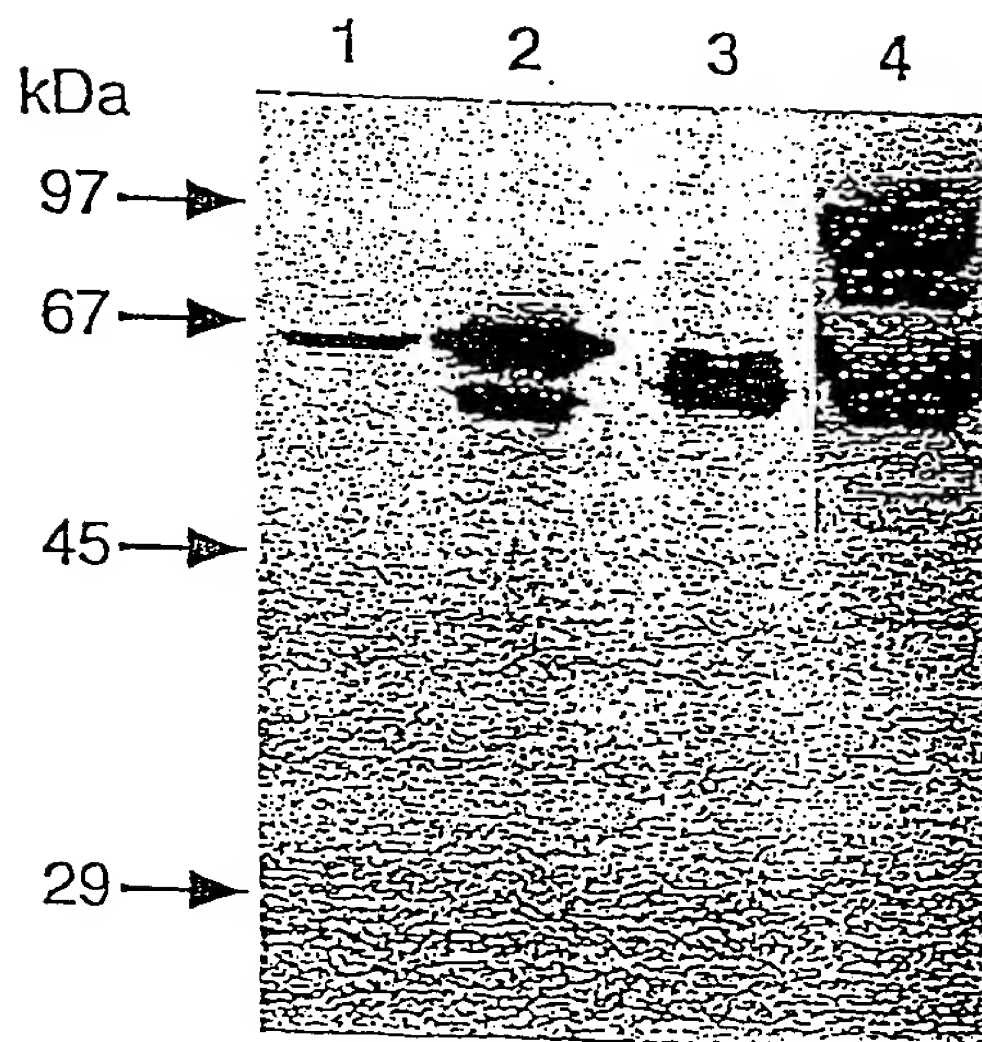
Bparg 779 NECLIIITGTETQISEYTGIAETIRWA.....RSHEDRSE.RDDMQRRCTEIVDAIDALEFR.RYLD....QFVPEKIRRELHKAICGFLRPGVBSSENLBAYA
Hparg 778 NECLIIITGTETQISEYTGIAETIRMS.....RSHEDGSE.RDDCRRRCTEIVDAIDALEFR.RYLD....QFVPEKIRRELHKAICGFLRPGVBSSENLBAYA
Hparg 770 NECLIIITGTETQISEYTGIAETIRWA.....RSHEDGSE.RDDMQRRCTEIVDAIDALEFR.RYLD....QFVPEKIRRELHKAICGFLRPGVBSSENLBAYA
Dparg 408 FEALVHLGAERYBNITGIAESFEMS.....GNFEDSTP.RDSSGRRQTAVDAIDALEFA.QSHH....QIREDLMERELHKAICGFLRPGVBSSENLBAYA
Ceparg 560 LEAISIVGATVFSITGICHTLEKNAELQPNESRQNTNFRDRFGRRLRVETIAIDAILFKGSKLDCQTEQLNKANIIEMKKASIGFMSQCPKFTNIP.IV

Bparg 668 TGNWCCGAFGGDARLKALIQILAAAAAERDVVIFTFGDSELMRDIYSMTFLTERKLTVG.VIKLLLRYYNEECRNCSTPGP.....DIKLYPFIYHA
Hparg 667 TGNWCCGAFGGDARLKALIQILAAAAAERDVVIFTFGDSELMRDIYSMTFLTERKLTVG.VIKLLLRYYNEECRNCSTPGP.....DIKLYPFIYHA
Hparg 659 TGNWCCGAFGGDARLKALIQILAAAAAERDVVIFTFGDSELMRDIYSMTFLTERKLTVG.VIKLLLRYYNEECRNCSTPGP.....DIKLYPFIYHA
Dparg 495 TGNWCCGAFGGDSILKALLQLMVCAQLGRPLATYTFGNVEFRDDFHEHMLLFRNDGTTVQQ.LWS.ILRYSRLIKEKSSKEPREMKASKKLYDVI...
Ceparg 659 TGNWCCGAFNGDKPLKFIQVIAAGVADRPLEFCBYOEPELAACKKXIEMKQKQDVTLCKSCPSIFS-----

Bparg 961 VESCTQTTHQPOQRTGA-----
Hparg 960 VESCAETADHSGQRTGT-----
Hparg 951 VESSAETTDMPGQKAGT-----
Dparg 590 KEELKKVRDVPGEAGASAEAGSSRVAGLGEGRSETSAKSSPELNMKQPARPQITITQOSTDOLLPAQLSQDNSSSEDQALLHLSODEEANAHEAASLEAKS
Ceparg 727 -----

Bparg 978 -----
Hparg 977 -----
Hparg 969 -----
Dparg 690 SVEISYSSITTSKTSSTATKSMGSGGRQLSLLEMLDTHYEKGSASKRPRKSPNCSKAEGSAKSRKEIDVDKDEKDDIVD
Ceparg 727 -----

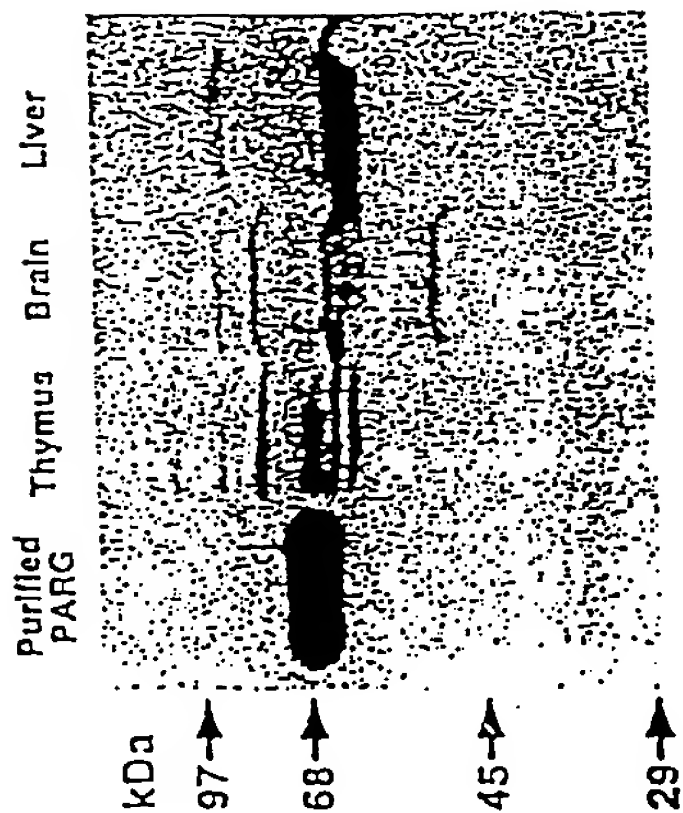
FIGURE 17



20050707 15:45:00

A

Bovine Tissue



B

Cell Extracts

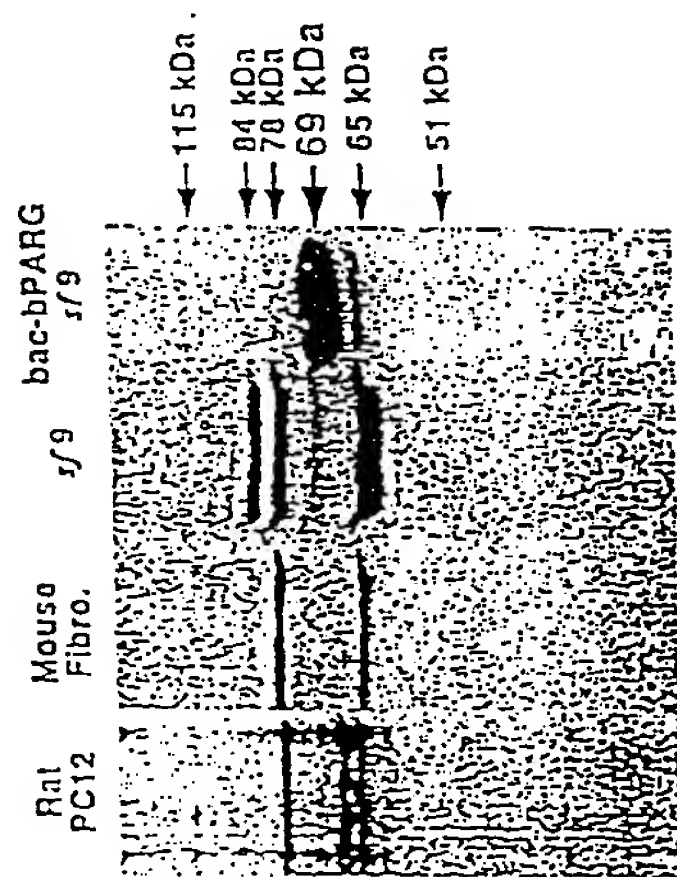
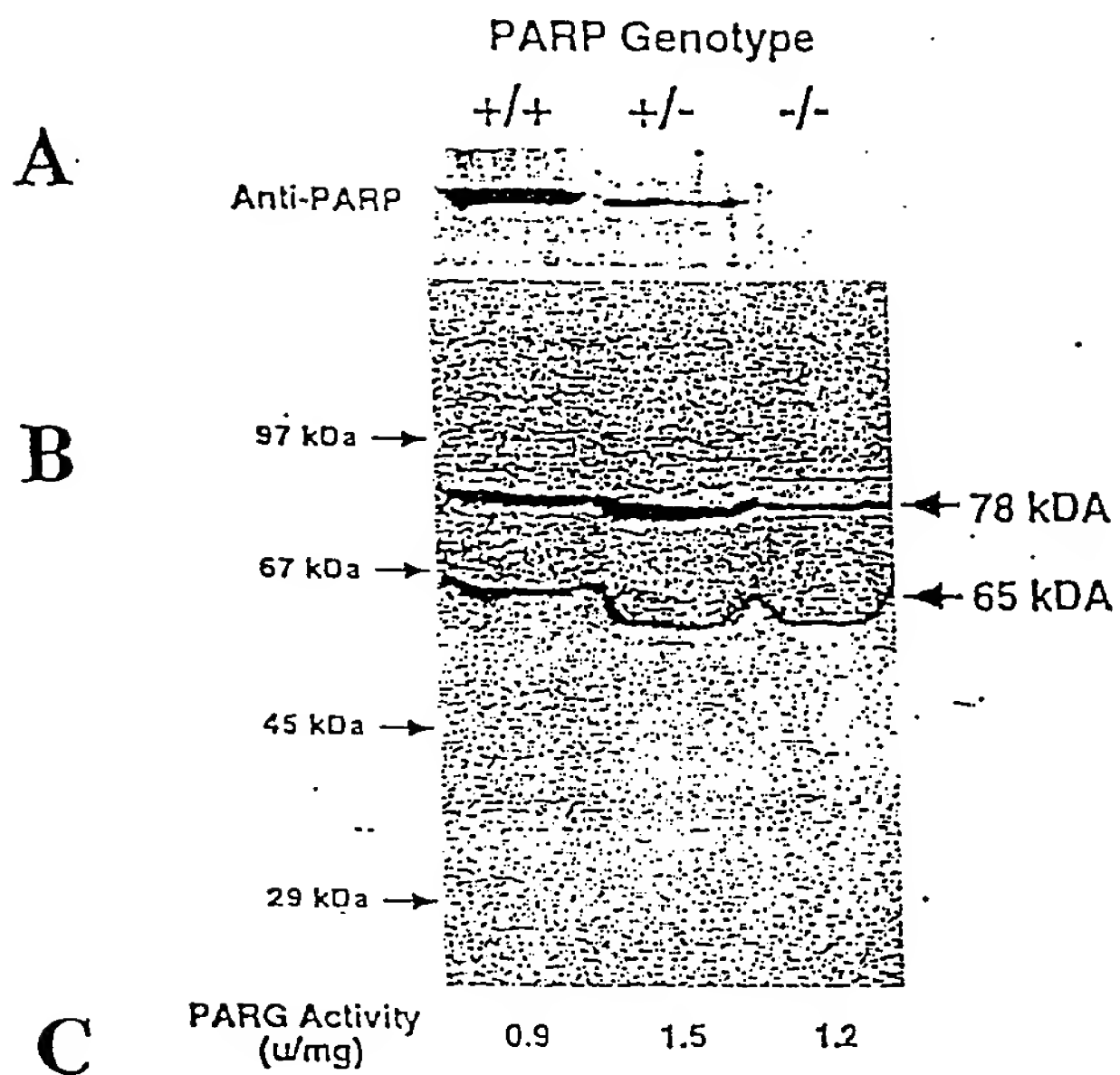


FIGURE 18

FIGURE 19



Genomic cloning of the PARG gene

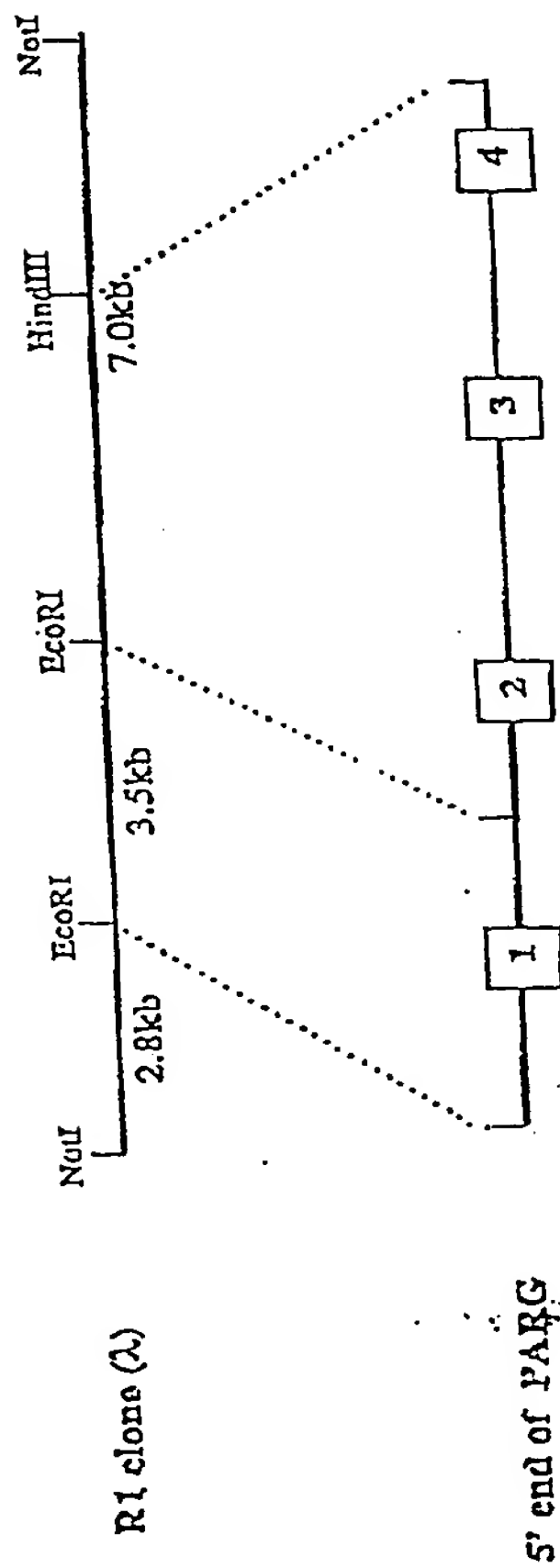


FIGURE 21

